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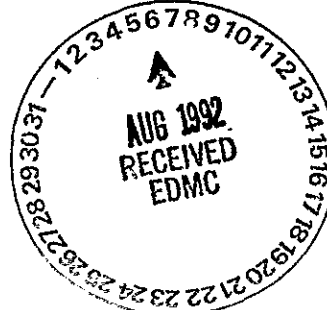
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ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN 168430

Proj.
ECN

2. ECN Category (mark one)		Supplemental <input checked="" type="checkbox"/>	Change ECN <input type="checkbox"/>	Supersedure <input type="checkbox"/>
Cancel/Void <input type="checkbox"/>		Direct Revision <input checked="" type="checkbox"/>	Temporary <input type="checkbox"/>	Discovery <input type="checkbox"/>
3. Originator's Name, Organization, MSIN, and Telephone No. G. T. Clark T7-20 3-5061				4. Date 7/23/92
5. Project Title/No./Work Order No. PUREX/UO3 Operations		6. Bldg./Sys./Fac. No. 224-U		7. Impact Level 3 ESQ
8. Document Number Affected (include rev. and sheet no.) WHC-SD-CP-PLN-011 REV 0		9. Related ECN No(s). -----		10. Related PO No. -----
11a. Modification Work	11b. Work Package Doc. No.	11c. Complete Installation Work		11d. Complete Restoration (Temp. ECN only)
<input checked="" type="checkbox"/> Yes (fill out Blk. 11b)	NA	NA		NA
<input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)		Cog. Engineer Signature & Date		Cog. Engineer Signature & Date
12. Description of Change Complete revision				
<div style="text-align: right;">  </div>				
13a. Justification (mark one)		Criteria Change <input checked="" type="checkbox"/>	Environmental <input type="checkbox"/>	Facilitate Const. <input type="checkbox"/>
Design Error/Omission <input type="checkbox"/>		Design Improvement <input type="checkbox"/>	As-Found <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>
13b. Justification Details Revision is needed due to changes made in the guideline document WHC-SD-WM-QAPP-011				
14. Distribution (include name, MSIN, and no. of copies) See distribution sheet				RELEASE STAMP OFFICIAL RELEASE BY WHC DATE JUL 24 1992 23 Sta #10

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ENGINEERING CHANGE NOTICE

Page 2 of 3

1. ECN (use no. from pg. 1)

168430

15. Design
Verification
Required☐ Yes
☒ No

16. Cost Impact

ENGINEERING

Additional ☐ \$
Savings ☐ \$

CONSTRUCTION

Additional ☐ \$
Savings ☐ \$

17. Schedule Impact (days)

Improvement ☐
Delay ☐

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number Revision

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer		PE	
Cog./Project Engr. Mgr.		QA	
QA		Safety	
Safety		Design	
Security		Other	
Proj. Prog./Dept. Mgr.			
Def. React. Div.			
Chem. Proc. Div.			
Def. Wst. Mgmt. Div.		DEPARTMENT OF ENERGY	
Adv. React. Dev. Div.			
Proj. Dept.			
Environ. Div.		ADDITIONAL	
IRM Dept.			
Facility Rep. (Ops.)			
Other SEE BELOW			

The approval signatures are shown on EDT 107524 (P.3 of this ECN). Due to time constraint, re-approval on the ECN is not obtained.

ENGINEERING DATA TRANSMITTAL

Page 1 of

1. EDT 107524

2. To: (Receiving Organization)

PUREX/UO3 Operations Program

3. From: (Originating Organization)

UO3 Plant Operations

4. Related EDT No:

N/A

7. Purchase Order No:

N/A

5. Proj/Prog/Dept/Div: Chemical Processing

6. Cog/Proj Engr: L.L.L. Adams

9. Equip/Component No:

N/A

8. Originator Remarks:

For Release

10. System/Bldg/Facility:

UO3 Plant

12. Major Assm Dwg No:

N/A

11. Receiver Remarks:

13. Permit/Permit Application No

N/A

14. Required Response Date:

N/A

15 DATA TRANSMITTED

(F)

(G)

(H)

(I)

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No	(D) Rev No.	(E) Title or Description of Data Transmitted	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-CP-PLN-011		1	Uranium Oxide (UO3) Plant Condensate Effluent to 216-U-17 Crib Sampling and Analysis Plan	3E54	1		

16 KEY

Impact Level (F)

1, 2, 3, or 4 see MRP 5.43 and EP-1.7

Reason for Transmittal (G)

1. Approval
2. Release
3. Information
4. Review
5. Post-Review
6. Dist (Receipt Acknow. Required)

Disposition (H) & (I)

1. Approved
2. Approved w/comment
3. Disapproved w/comment
4. Reviewed no/comment
5. Reviewed w/comment
6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION I(See Impact Level for required signatures)								(G)	(H)
Reason	Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp
1		Cog./Proj. Eng L.L.L. Adams	<i>[Signature]</i>	7-21-92		J. Hyatt	<i>[Signature]</i>	7/21/92		1	
1		Cog./Proj. Eng Mgr. W.E. Ross	<i>[Signature]</i>	7/21/92		Environmental R. Lerch	<i>[Signature]</i>	7-21-92		1	
1		QA C. A. Colvin	<i>[Signature]</i>	7/21/92		Environmental QA G. Carpenter	<i>[Signature]</i>	7-21-92		1	
1		Safety R.E. Piippo	<i>[Signature]</i>	7/21/92		Legal P. Mackey	<i>[Signature]</i>	7/21/92		1	
1		J.E. Cottrell	<i>[Signature]</i>	7/21/92		Solid/Liquid Waste	<i>[Signature]</i>	7/21/92		1	
1		Environmental Prot. D. Fritz	<i>[Signature]</i>	7/21/92		Env. Eff. Steering Comm. W. Ruff	<i>[Signature]</i>	7/21/92		1	
1											

18. *[Signature]* 7-23-92
Signature of EDT Originator Date

19. *[Signature]* 7-23-92
Authorized Representative for Receiving Organization Date

20. *[Signature]* 7-23-92
Cognizant/Project Engineer's Manager Date

21. DOE APPROVAL (if required)
Ltr No.
☐ Approved
☐ Approved w/comments
☐ Disapproved w/comments

SUPPORTING DOCUMENT

1. Total Pages **27**

2. Title

Uranium Oxide (UO₃) Plant Process Condensate Effluent to 216-U-17 Crib Sampling and Analysis Plan

3. Number

WHC-SD-CP-PLN-~~11~~⁰¹¹

4. Rev No.

1

5. Key Words

Process Condensate; Sampling and Analysis; UO₃; UNH

6. Author

Name: G.T. Clark & L.L.L. Adams

Signature

Organization/Charge Code 17300

7. Abstract

This document presents the UO₃ Plant's process condensate sampling and analysis plan. The plan describes sampling methods, location, frequency, analytes, and stream sources. A description of the facility is also included.

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10. RELEASE STAMP

OFFICIAL RELEASE
BY WHC
DATE JUL 24 1992

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9. Impact Level 3 ESQ

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URANIUM OXIDE (UO₃) PLANT PROCESS CONDENSATE EFFLUENT TO 216-U-17 CRIB
SAMPLING AND ANALYSIS PLAN

Title	Page
A. SAMPLING OBJECTIVES	2
A.1 Introduction	2
A.2 Objectives	3
A.3 Approach	4
B. SITE BACKGROUND	5
B.1 UO ₃ Plant Facility Description	5
B.2 Stream Description	7
B.3 216-U-17 Crib Description	13
C. RESPONSIBILITIES	14
D. Sampling Location and Frequency	15
D.1 Sampling Location	15
D.2 Sampling Frequency	16
E. SAMPLE IDENTIFICATION	17
E.1 Liquid effluent characterization	17
Sample Labeling	
E.2 Routine Sample Labeling	17
F. SAMPLING EQUIPMENT AND PROCEDURES	18
F.1 Liquid effluent characterization Samples	18
F.2 Routine Samples	19
G. SAMPLE HANDLING AND ANALYSIS	19
G.1 Liquid effluent characterization Samples	19
G.2 Routine Samples	24

List of TABLES

TABLE 1	CONTRIBUTORS TO THE CONDENSATE COLLECTION TANK C-9
TABLE 2	CONTRIBUTORS TO THE UNH CONCENTRATORS
TABLE 3	CONTRIBUTORS TO THE URANIUM RECYCLE CONCENTRATOR C2
TABLE 4	ROUTINE SAMPLE ANALYTES AND PROCEDURES

List of Figures

Figure 1	UO ₃ Plant and Auxiliary Facilities
Figure 2	224-U Ground Floor Equipment Layout
Figure 3	Contributors to UO ₃ Process Condensate

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A. SAMPLING OBJECTIVES

A.1 Introduction

This Sampling and Analysis Plan (SAP) is to establish the requirements and guidelines used by Westinghouse Hanford Company (WHC) in implementing an upgraded Liquid Effluent Sampling Program on the UO_3 Plant Process Condensate Stream Effluent. The effluent contains all liquids that are directly generated from within primary containment, the process tanks, vessels and equipment at the facility. The effluent also contains distilled rainwater runoff that requires processing because of direct contact with potentially contaminated areas within the radiation control zones within the facility. The effluent does not contain liquids from sanitary sources. The liquids from non process sources (cooling water, steam condensate, seal water, etc.) are covered in another SAP titled Uranium Oxide (UO_3) Plant Wastewater Effluent to 216-U-14 Ditch Sampling and Analysis Plan, WHC-SD-CP-PLN-012.

The UO_3 Plant has one operational run, called a stabilization campaign, to complete before the facility is connected to a site wide treatment system in June, 1995. The stabilization campaign will process the remaining uranyl nitrate hexahydrate (UNH) solutions at Hanford. The UNH solutions are corrosive and the stabilization campaign will convert the liquid material to uranium trioxide, a non corrosive solid powder. The stabilization campaign is expected to require approximately 4 to 6 weeks to complete. The stabilization campaign will be followed by the cleaning and washing of equipment and contamination control areas. The facility will then be placed in a standby mode.

The requirements in this document are in addition to the Liquid Effluent Sampling Quality Assurance Program Plan (QAPP), WHC-SD-WM-QAPP-011. The QAPP provides the Hanford Site guidelines and requirements for special high quality liquid effluent sampling activities, which include: overall scope and direction to the sampling activities, the control of samples, the laboratory analyses, the processing of data, the control of data, the quality assurance requirements, and corrective actions used in obtaining high quality data for the Liquid Effluent Sampling Program. The high quality data are obtained from controlled grab samples called Liquid effluent characterization Samples that are used to characterize the distribution of analytes in the effluent and to determine which analytes will require further monitoring in the future by the facility's existing routine monitoring program.

The SAP is a facility specific document for describing how the requirements of the QAPP shall be implemented for activities occurring at the facility. The SAP provides a general description and identifies procedures that will be used to execute the work needed to implement the QAPP requirements. In addition, the SAP describes how the liquid effluent characterization samples and data will be integrated with an existing liquid effluent monitoring program.

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The existing liquid effluent monitoring program was implemented to meet the requirements of the Department of Energy (DOE) Order 5400.1. The DOE Order requires each facility develop a Facility Effluent Monitoring Plan (FEMP). The routine monitoring program complies with the requirements in the Quality Assurance Program Plan for the Facility Effluent Monitoring Plan, WHC-EP-0446. The existing routine monitoring plans and procedures will not be altered unless the liquid effluent characterization sampling in this SAP has a significant discrepancy in analyte concentration data as compared to the data obtained from routine monitoring.

The QAPP was written to allow each facility some flexibility in accommodating the Hanford Site requirements. One primary reason for this flexibility is because of differences in procedures for surveying radiation sources at each facility. The SAP is to identify facility specific exceptions to the QAPP, which include changes to the required list of analytes. The QAPP requirements for chain of custody, laboratory analysis, validation of data, control of records, and corrective actions shall not be modified by this SAP.

A.2 Objectives

The primary objectives of the SAP are to:

- o Obtain several sets of known quality data to develop a long term sampling plan.
- o Confirm the analyte concentration data reported in the stream specific reports and the conclusion that the stream does not contain dangerous waste as defined in Washington Administrative Code (WAC) 173-303, Dangerous Waste Regulations, as amended.

The secondary objectives are to:

- o Provide highly quality controlled data for the evaluation of routine process sampling methods so that existing data can be evaluated and utilized.
- o Provide solid waste loading data to support development of waste water treatment projects and groundwater remediation studies.
- o Provide historical data for the Washington Administrative Code (WAC) 173-240 engineering reports and (WAC) 173-216 waste discharge permit applications.

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A.3 Approach

This SAP has been structured to obtain high quality sampling data that will identify the types of contaminants found in the liquid effluent streams from UO₃ Plant. The data will come from grab samples, liquid effluent characterization samples, that have quality controlled and verifiable methods for collecting the sample media, transportation of the sample media, analysis of the media, the statistical evaluation of the analytical results, and the storing of sample records. All liquid effluent characterization sampling work shall be performed according to approved written procedures. The procedures shall comply with the requirements of Test Methods for Evaluating Solid Waste, EPA SW-846, latest revision.

All personnel associated with collection of liquid effluent characterization samples, processing of the samples, processing of the data, and control of records shall comply with the procedures related to their responsibilities. The personnel shall sign a document verifying that they have read and understand the procedures. The signed documents shall become part of the training records.

The liquid effluent characterization samples are grab samples because some constituents (volatile organics, ammonia) are unstable with time. Grab samples are used to minimize the holding time from sample collection to laboratory analyses to prevent a significant loss of these unstable analytes.

Liquid effluent characterization samples shall be obtained at least once on liquid effluent resulting from each processing mode at the UO₃ Plant before, during, and after the stabilization campaign. In addition, liquid effluent characterization samples shall be obtained on the raw water supply system. These samples are to be analyzed for chemical constituents selected from Appendix A of the QAPP that are of concern for designating dangerous waste characteristics and for preparation of Discharge Permits. Chemical analytes that are not found, will be eliminated from the list of analytes in future liquid effluent characterization samples. Chemical analytes found in both the effluent and raw water at equivalent concentration levels will also be eliminated from the list of analytes. The amended list shall be a Class 3 Change in accordance with the Hanford Tri-Party Agreement as stated in the QAPP. Chemical analytes found to be added by UO₃ Plant operations with significant measurable quantities shall be included in the list of analytes for the existing routine monitoring sampling program. The document used for determining significance in amending the routine list of analytes is Chapter 173-200 WAC, Water Quality Standards for Ground Waters of the State of Washington.

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The liquid effluent characterization samples shall also be used to provide a quality control check on the procedures and methods used in the existing routine monitoring sampling program. During the sampling for liquid effluent characterization samples, extra sample bottles shall be obtained and sent to the on-site process control laboratory for analysis. The process control laboratory shall run an analysis using the same list of analytes and procedures as for routine samples. The routine sampling results will be compared with the liquid effluent characterization sampling results for common analytes. Recurring significant differences in data will be used as a basis for preparing a plan of corrective action to improve the existing routine sampling program.

The existing routine samples are flow proportional composite samples taken by an automatic sampler to monitor all the liquid effluent discharged to the environment. These samples have a very limited list of analytes to reduce the hold time between collection and laboratory results, so that the data can be used for process control. The routine samples are collected, transported, and analyzed according to existing procedures at Hanford. These existing procedures shall not be modified unless a plan of corrective action determines that the existing routine monitoring program needs to be improved.

The past routine samples provide an important pool of historical data. The number of samples provide soil column and process equipment solids loading information for future remediation studies, treatment process design, and permitting documentation. The data from the samples will also be used to determine the causes of seasonal, climatic, and operational variations in the quality of the liquid effluent. The SAP includes the existing routine sampling program for the accumulation of historical information and to provide a baseline data pool for comparing the reliability and validity of past data.

B. SITE BACKGROUND

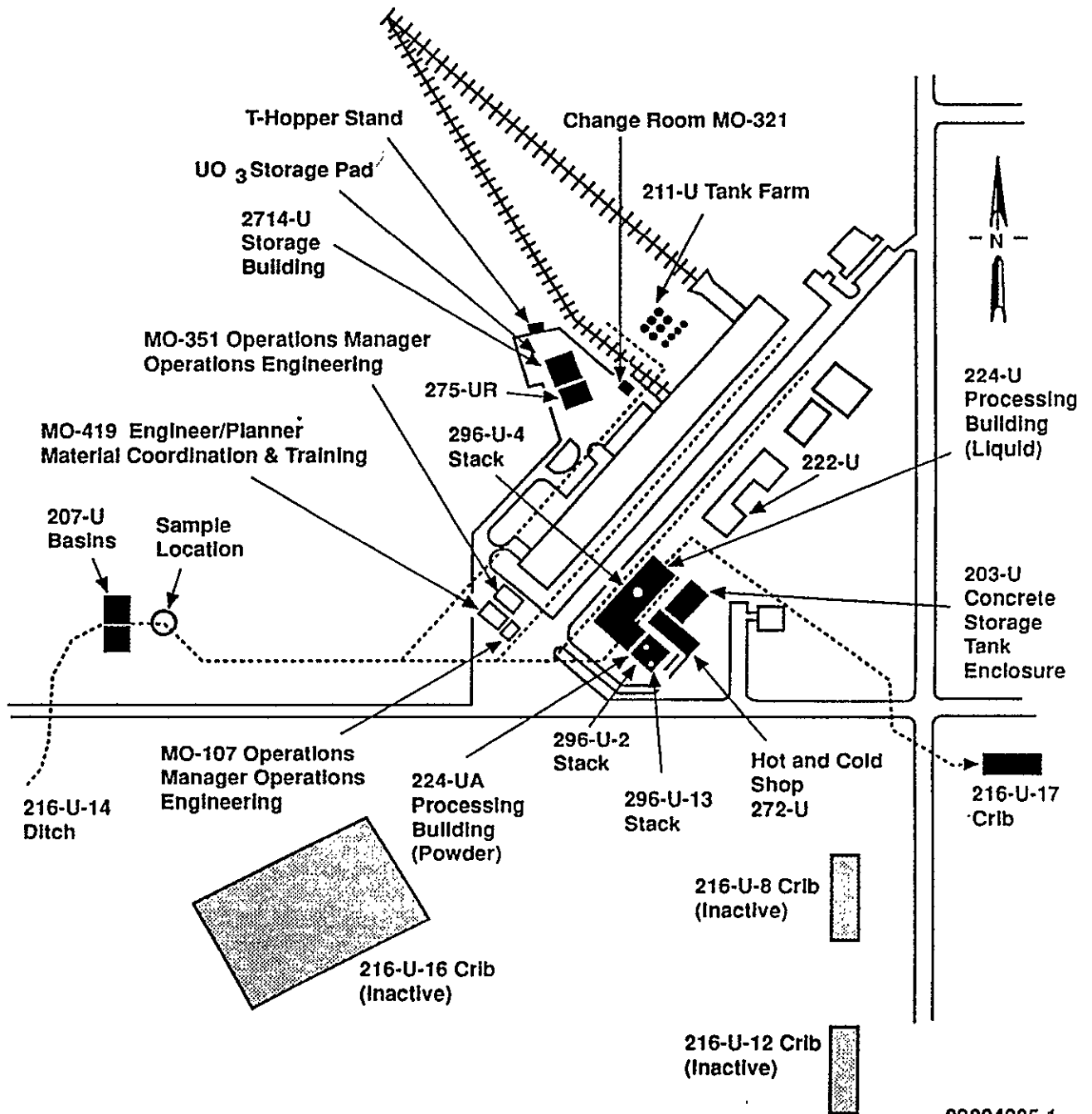
B.1 UO₃ Plant Facility Description

The UO₃ Plant is located in the south-central portion of the 200 West Area of the Hanford Site. Figure 1 shows the plant overall layout. The Plant consists of two primary processing facilities, Buildings 224-U and 224-UA, and several ancillary buildings. The facilities are adjacent to the inactive 221-U-Plant Canyon Facility.

The UO₃ Plant facility receives 60% UNH solution from the PUREX Plant at Hanford and converts the solution to UO₃ powder, nitric acid, and condensed water vapor. The principal processes are evaporation and calcination. Concentrated sulfuric acid was the only chemical added to the process (400-600 parts sulfur per million parts uranium) and it was used to improve product properties per customer specification. (Sulfuric acid will not be used in the stabilization campaign.) The

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Figure 1. Site Plan.



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calcination process changes the nitrates in solution to nitrogen oxide gases that are recovered as 45-50% nitric acid in a gas-liquid absorption process. The recovered nitric acid is shipped back to the PUREX Plant. The UO_3 powder is loaded into shipping containers. The UO_3 Plant does not operate continuously; it has operated 179 days in 16 production campaigns since January, 1984, a utilization factor of 6.5%.

During the 93.5% of the time the plant is not operating the process the plant is in a "standby" mode of operation where rainwater, steam condensate, water from area wash down, water from safety showers, and occasional process equipment liquids are collected in the sumps and transferred to a collection tank. When sufficient water is collected the water is transferred to a steam heated vessel, Tk-C2 recycle concentrator, and the water is evaporated. The residual liquid from the evaporation process has a high uranium concentration and was periodically shipped to PUREX for disposition. This material will be converted to powder at the end of the stabilization campaign. Decontamination chemicals other than what is listed in Section B.2 are not used because they introduce undesirable species to the uranium recovery process.

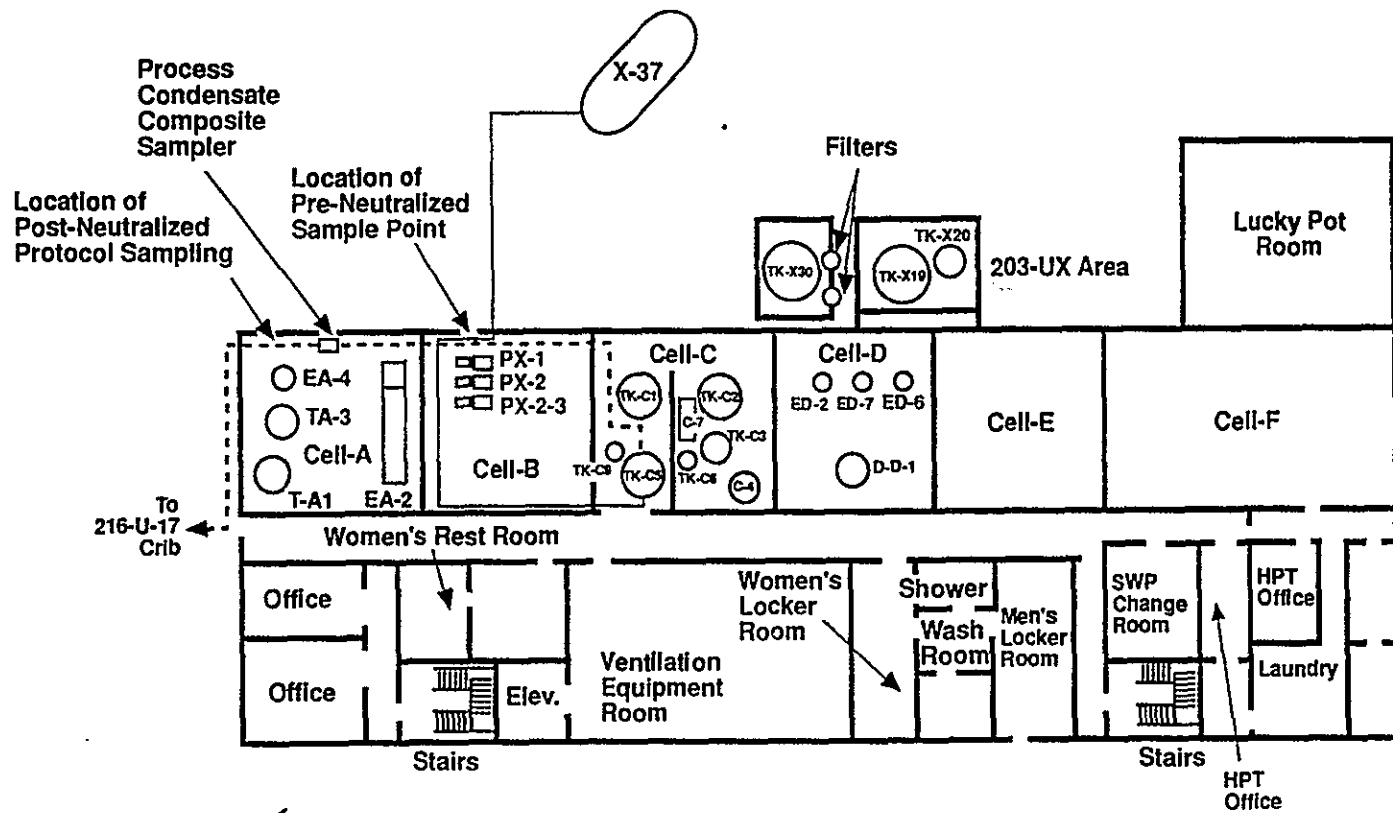
In the past the powder was shipped to other Department of Energy facilities for enrichment processing and made into fuel elements for reuse at N reactor. Since the shutdown of the N reactor the UO_3 powder produced is being stored at the UO_3 Plant complex until the decision for the disposition of the powder is made by the Department of Energy.

B.2 Stream Description

Most of the UO_3 Plant process condensate stream originates in off-gas condensers in building 224-U. The effluent water, except for some process make-up water from the raw water supply, is surplus condensed vapor from two evaporation processes. From the condensers, the process condensate gravity drains to a condensate collection tank (Tk-C9) and a surge tank (Tk-X37). The ground level floor plan of Building 224-U containing the equipment and waste stream piping is shown in Figure 2. The diagram of contributor sources is shown in Figure 3. Tk-C9 is a 40 gallon closed vessel that is used as a pump feed tank to supply a portion of the condensate as scrub water to the nitric acid absorption process. The remainder of the water is drained to Tk-X37 and becomes the process condensate effluent from the plant.

Direct contributors to the condensate in Tk-C9 as listed in TABLE 1 include feed UNH concentrator off-gas from E-D2, E-D6, and E-D7 concentrators, the nitric acid absorber off-gas from T-A3 (primary source of NO_x), uranium recycle concentrator (Tk-C2) off-gas, steam from the steam process vacuum jets J-A-1 and J-A-3, and ventilation offgas from miscellaneous process vessel vents (Tk-C1, Tk-C3, Tk-C4, Tk-C5 and Tk-X30). Raw water, the only non vapor source of water, is sometimes used at the end of a process run to provide adequate scrub water for the nitrogen oxide absorption process when the UNH concentrators have concluded their operation and the calciners are finishing the processing of 100 percent UNH.

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224-U Building

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Figure 2. 224-U Building.

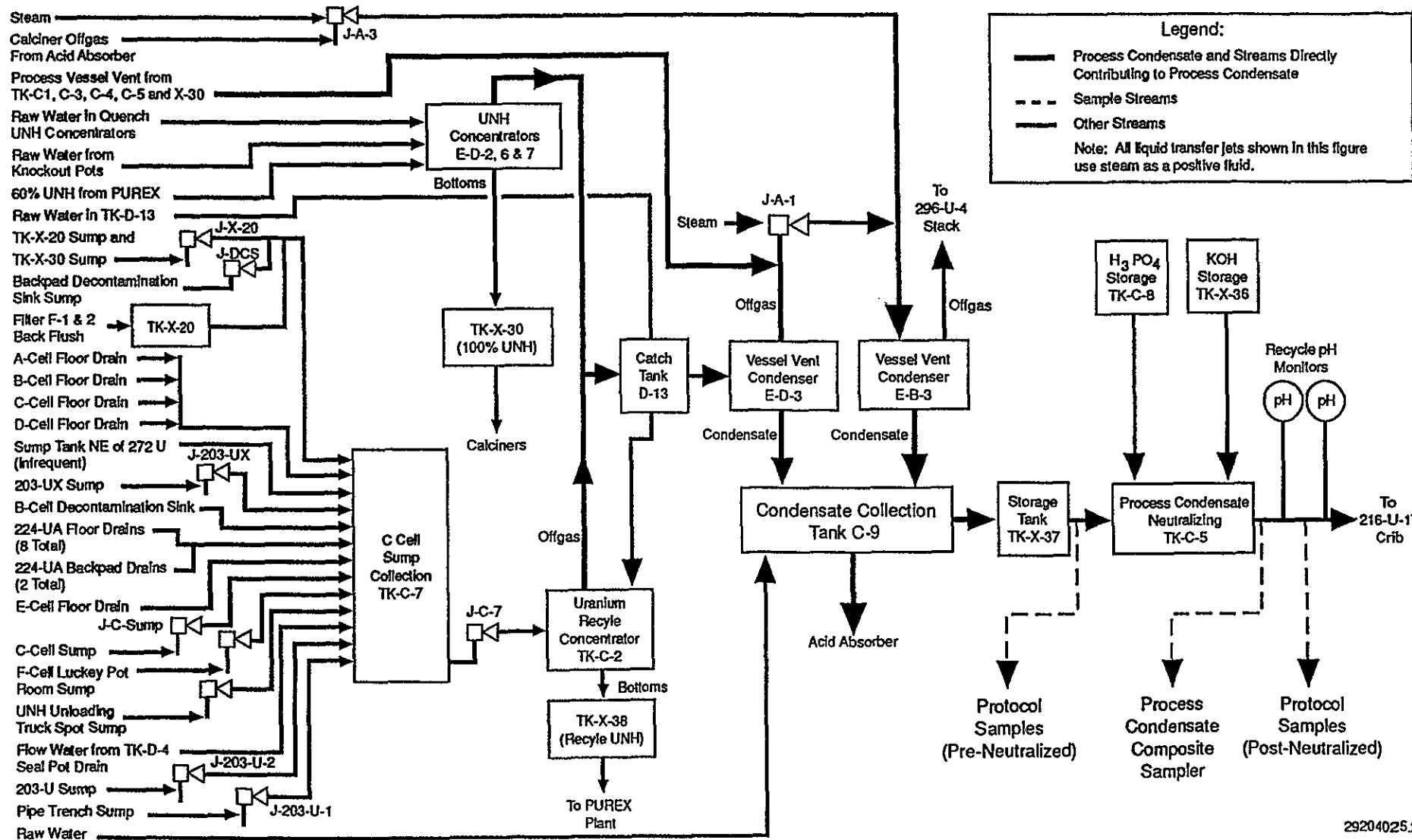


Figure 3. Contributors to UO3 Process Condensate

TABLE 1

CONTRIBUTORS TO THE CONDENSATE COLLECTION TANK C-9

SOURCE	CONTRIBUTORS
Steam to Jets J-A-1 and J-A-3	Steam from the Power Plant
Calclner Offgas from Acid Absorber	Water vapor with a small amount of NO _x gases and air
Process Vessel Vents from Tk-C1, C3, C4, C5, and X30	Air that has been humidified by the moisture in the tanks. The tanks do not contain any volatile chemicals except NO _x .
Catch Tank D-13	Water vapor from two major condensate sources. Details in TABLE 2 and TABLE 3. Fifty gallons of water is maintained in the bottom of the Catch Tank to prevent the solidification of any UNH that may be carried over in mist. Water does not discharge to process condensate stream.
Raw Water	Water added to the process when the flow of recycled water to the acid absorber is inadequate to absorb the NO _x gases to the exhaust stack. Maximum flow is 1.5 gallons per minute. (non routine stream)

Two evaporation processes, UNH concentrators and uranium recycle concentrator, collect the liquid from many indirect contributors to Tk-C9. The vapor from these evaporation processes passes through Catch Tank D-13. The contributors to the three UNH concentrators are shown in TABLE 2.

The largest contributor to the process condensate stream is the evaporated water from the UNH concentrators. The flow of condensed vapor from the concentration of UNH can range from 5 to 9 gallons per minute. The steam to the steam jets is estimated to contribute approximately 2 to 5 gallons per minute. Approximately two thirds of the steam is used in the J-A-3 steam jet. The raw water is added as necessary to Tk-C9 to keep the absorption process gas NO_x emissions within air discharge limits. The maximum flow of raw water is about 1.5 gallons per minute.

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TABLE 2
CONTRIBUTORS TO THE UNH CONCENTRATORS

SOURCE	CONTRIBUTORS
60% UNH from Purex	Free water in feed
Raw Water from Knockout Pots	Wash water for spraying demister pads, periodic flushing to concentrators
Raw Water to Quench UNH Concentrators	Emergency water supply to maintain concentrator below a maximum operating temperature limit

Contributors to the recycle concentrator are listed in TABLE 3. The evaporation in Tk-C2 is a vapor source for both operating and non operating flow to the process condensate stream. The tank receives the water from all the miscellaneous and potentially uranium contaminated sources in the UO₃ Plant. These sources include water that has accumulated in the sumps from decontamination sinks, equipment wash down water, radiation zone floor drains, and the UNH unloading station. Rainwater is also collected in the same sumps from the concrete pads and roof drains to prevent any uncontrolled migration of uranium solids. The water collected in these sumps is from intermittent sources and cannot be segregated. The decontamination chemicals used for uranium removal in the sinks and equipment wash down is nitric acid. Infrequently, small amounts of common household detergents are also used for decontamination. No flammable organic or chlorinated hydrocarbon chemicals are to be used for decontamination.

The amount of water collected from these sources averages between 80,000 to 95,000 gallons per year. Rainwater is the largest single source (70-80%). The collected water is concentrated in Tk-C2 and between 92 and 98 percent of the water becomes condensate to the 216-U-17 Crib. The tank is steam heated under a slight vacuum from the JA-1 steam jet. The flow of the vapor condensate from Tk-C2 can range from 0 to 4 gallons per minute to the process condensate stream.

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TABLE 3

CONTRIBUTORS TO THE URANIUM RECYCLE CONCENTRATOR C2

SOURCE	CONTRIBUTORS
15 Floor Drains in Zone. [Cells A, B, C, D, E, 224 UA and 224 UA Backpad]	Floor wash down water and equipment leaks. Two Backpad floor drains are outside and will receive rainwater. Occasional use of household detergents. Flow is intermittent.
5 Sumps in Zone. [X-20, X-30, 203-UX, 203 U and Pipe Trench]	Rainwater, steam heating condensate, UNH equipment leaks. Largest contributing sources of water.
C-Cell Sump	Floor wash down water. Occasional use of household detergents.
Backpad Decontamination Sink	Steam, nitric acid, and rinse water. No flammable or toxic chemicals are used. Flow is variable and occurs during and at the end of a process run.
F-1 and F-2 Filter Back Flush	Steam cleaning condensate from the F-1 and F-2 UNH filters. No chemicals are used.
Sump Tank NE of 272-U	Maintenance shop heating steam condensate and rainwater from a nearby zone floor drain.
B-Cell Decontamination Sink	Inactive and not used because of inadequate ventilation
F-Cell/Lucky Pot Sump	Inactive Process Area. Water from safety shower testing. Steam ejector is used to pump water.
UNH Unloading Truck Spot Sump	Rainwater and steam heating condensate. Intermittent flow.
Tk-D4 Seal Pot Drain	Raw water overflow from a vacuum barometric seal. Infrequent flow.
Raw Water to Tank D-13	A 50 gallon raw water heel to prevent solidification of any 100% UNH from the concentrators. This water heel is seldomly discharged to the uranium recycle concentrator.

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TK-X37, a 14,000 gallon agitated tank, receives all the surplus condensate from Tk-C9. The tank Tk-X37 was installed in the process in 1987 and provides substantial back-mixing of the process condensate to dampen any peak instantaneous variations in pH and constituent concentrations. The tank was installed to provide surge capacity and improve the consistency of process condensate neutralization in Tk-C5.

The 800 gallon tank, Tk-C5, was installed as an elementary neutralization unit to treat all the process condensate. The volume in the batches are held constant by means of pump interlocks. An automatic batch counter was installed on the discharge Tk-C5 to calculate the volume of water sent to the crib and to activate the 216-U-17 Crib process condensate effluent sampler.

The process condensate is batch neutralized (nominal 460 gallons per batch) with potassium hydroxide (KOH) and phosphoric acid (H_3PO_4) buffer to a pH range of 6.5 to 8.5. The neutralized condensate is pumped to the 216-U-17 crib for disposal. The neutralization system is equipped with redundant pH probes, discharge instrumentation interlock system, transmitters, alarm switches, and strip-chart recorders monitoring the pH of the process condensate at a location just prior to exiting the 224-U building. The pH probes are of a standard industrial design. The pH probes are calibrated to an accuracy of 0.5 units once month with pH 4, 7, and 10 buffer solutions. All other control instrumentation associated with the tank is calibrated once every 6 months or 12 months.

The 216-U-17 Crib process condensate effluent sampler is an Isolok Model SAB sampler. The sampler is equipped with a 5 gallon bottle. The sampler is interlocked to the neutralization process to sample the stream when contents from tank Tk-C5 are being discharged. The sampler takes proportional samples whenever the batch discharge from Tk-C5 takes place.

B.3 216-U-17 Crib Description

The receiving site for the UO_3 process condensate is the 216-U-17 Crib. It became the disposal site for the UO_3 Plant process condensate on January 30, 1988, upon completion of Project B-545, 216-U-12 Crib Replacement. The 216-U-17 Crib is approximately 200 ft south of 16th Street, and 200 ft west of Beloit Avenue in the 200 West Area. A dedicated pipeline about 1,200 ft long transports the UO_3 process condensate from 224-U to 216-U-17. The crib consists of about 150 ft of 6-in. perforated fiberglass reinforced pipe, laid in a gravel bed, and covered with a polyethylene barrier, backfilled, and stabilized. The crib is sized to dispose, by percolation, of up to 15,000 gal/d of process condensate. No corrosive solutions have ever been discharged to 216-U-17 Crib.

All discharges to the crib were suspended during the summer of 1989, pending the review of a regulatory issue. The plant has only operated 21 days since the crib originally opened.

C. RESPONSIBILITIES

The responsibility descriptions below are related to activities occurring at the UO_3 Plant. Overall responsibilities covering other areas are the same as found in the QAPP.

UO_3 Process/Environmental (Environmental) Engineering

- o Prepare the Sampling and Analysis Plan.
- o Insure procedures are updated to support the sampling activities.
- o Provide the Sampling Task Leader. (Environmental Engineer)
- o Initiate scheduling of personnel required for sampling.
- o Provide technical support for sampling activities.
- o Review data logs and sampling activities.
- o Surveil chain of custody activities.
- o Review liquid effluent characterization sampling data for completeness and consistency.
- o Ensure liquid effluent characterization sampling data and flow information are transferred to ETP for filing with Environmental Data Management Center (EDMC).
- o File routine sample data at the UO_3 Plant and the EDMC.

The data in files shall include copies of field notes, sampling logs, process flow records, analytical results, and validation calculations.

UO_3 Plant Operations

- o Provide a trained operator for escort during liquid effluent characterization sampling.
- o Provide sampling and transportation of routine samples.
- o Complete sample log sheets for routine samples.
- o Assist in moving liquid effluent characterization samples through radiation zone barriers.

UO_3 Health and Safety

- o Provide a Health Physics Technician (HPT) for radiation surveying of liquid effluent characterization sample packages.
- o Provide the Radiation Work Permit (RWP) instructions for zone entry.
- o Verify radiation worker training requirements of sampling personnel.

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Sampling and Mobile Laboratories

- o Provide trained samplers for liquid effluent characterization sampling activities. One sampler shall have a WHC Certificate of Qualification from the Environmental Engineering Technology, and Permitting Group. Certificated sampler shall direct liquid effluent characterization sampling and packaging.
- o Prepare the UO₃ Plant liquid effluent characterization sampling and packaging procedure.
- o Document sampling activities in a log book.
- o Transport liquid effluent characterization samples to laboratory or shipping center.
- o Initiate "Chain of Custody" documentation for liquid effluent characterization samples.
- o Package liquid effluent characterization samples for shipping.
- o Ensure copies of field logs and other sampling data sheets are filed with UO₃ Plant Environmental Engineer.

Facility Quality Assurance (QA)

- o Provide surveillance of the liquid effluent characterization sampling program.
- o Audit records and procedures.

D. SAMPLING LOCATION AND FREQUENCY

D.1 Sampling Location

The overflow of Tk-C9 tank is the source of all process condensate to the 216-U-17 Crib. The tank is installed in the process to provide recycle water to the acid absorption column. The water in excess of the absorption process requirements flows to Tk-X37. Tank Tk-X37 is a holding tank for the batch neutralization process that occurs in Tk-C5. The neutralization process adds both potassium hydroxide and phosphate ion. The change in pH and the phosphate ion will cause some analytes to precipitate or change chemical properties. Samples must be taken both before and after Tk-C5 to provide data showing the effects of the neutralization process.

A set of two samples shall be taken during each liquid effluent characterization sampling event. One sample shall be from the transfer line (preneutralized process condensate) between tanks Tk-X37 and Tk-C5. The other shall be taken from the Tk-C5 discharge line to the 216-U-17 Crib (postneutralized process condensate). Figure 3 shows the locations of the sample points. The location for the preneutralized sample is in the pipe at the outlet of tank Tk-X37 where all contributors to the stream, except for the neutralization chemicals, are collected. The routine samples will be taken from the process condensate automatic

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sampler (See Figure 3) which collects post-neutralized process condensate from Tk-C5.

D.2 Sampling Frequency

Currently, the discharge line to 216-U-17 Crib has a blind flange installed to prevent the release of UO_2 Plant process condensate. The UO_2 Plant is in a "standby mode" with limited pre-campaign testing. When the blind flange is removed, the operational schedule will first process rainwater that has accumulated at the facility for more than three years in Tk-C2, Recycle Evaporator. This is expected to take 10-12 weeks. The second part of the schedule is to operate the evaporators and calciners in the stabilization campaign to process UNH. This is expected to take 4-6 weeks. Lastly, the schedule calls to process rainwater and equipment washdown water in Tk-C2 following the stabilization campaign. This is expected to take 4-13 weeks. Rainwater will occasionally be processed during the stabilization campaign. The facility will have three modes of operation during the first year. One liquid effluent characterization sample will be obtained during each operational mode, plus one sample will also be taken when rainwater is being processed during stabilization. The limited operational time of the plant and labor intensity involved in sampling will not permit more than two samples to be planned during the stabilization campaign.

One liquid effluent characterization sample shall be taken on the condensate produced from the processed rainwater prior to the stabilization campaign, two samples shall be taken during the stabilization campaign, one following the stabilization campaign, and one annually thereafter.

Of the two liquid effluent characterization samples to be taken during the stabilization campaign, one sample will be taken when both the UNH concentrators and the recycle concentrator are operating. The other sample will be taken when only the UNH concentrators are operating.

The effluent vapor from the Tk-C2, Recycle Evaporator, has been found to be very low in chemical analytes in past plant process control sampling. Single samples occurring once per year following the first year should confirm the water quality in the two samples of the first year.

Routine samples shall be collected weekly during the stabilization campaign. During plant standby, the routine samples shall be taken at the end of processing condensate in Tk-X37 to the crib. Duplicate routine samples shall be collected and analyzed at the on-site laboratory each quarter.

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E. SAMPLE IDENTIFICATION

E.1 Liquid effluent characterization Sample Labeling

Sample labels for liquid effluent characterization samples shall be furnished by the sampling team from the Sampling and Mobile Laboratories. The labels will require the following information to be recorded by a member from the sampling team: identification of the person in charge of collecting the sample; unique sample identification number; date and time the sample was collected; the place the sample was collected; the stream identification; and the analysis to be performed on the sample. The unique sample number shall be obtained from the Hanford Environmental Information System (HEIS). In addition, each bottle shall be identified with a bar code sticker attached to the bottle by the bottle manufacturer. The bar code shall identify the bottle lot number and individual bottle number.

In addition to identification numbers, the samples will require labeling to indicate potential hazards. Any preneutralized solution sample container must bear a dangerous waste designation number D002. All sample containers for the process condensate must be labeled with a radiation sticker.

E.2 Routine sample Labeling

The numbers on the label will be assigned by the laboratory per the sample schedule in Procedure LO-090-304, "Receiving, Handling and Disposal of Routine Laboratory Process Samples".

The general numbering method will be as follows:

U - (4 digit serial number)

where U = UO₃ Plant designation
Serial number = Computer generated sequential number

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F. SAMPLING EQUIPMENT AND PROCEDURES

F.1 Liquid effluent characterization Samples

The liquid effluent characterization sampling procedures will comply with Processing and Analytical Laboratories, LO-080-431 A-0, Procedure for Collecting RCRA/CERCLA Samples from UO₃ Effluent Streams. This document is based on recommended practices found in SW-846, Chapter Nine. Necessary special sampling equipment, spare parts, buffer solutions, cleaning solutions, and personnel protection devices are included in the procedure. Sampling will be surveilled at random by a cognizant Quality Assurance person.

Sampling for liquid effluent characterization samples shall be through purged pipe taps into sample bottles. Sample bottles shall be new commercially available certified precleaned glass or plastic bottles. The sample shall be drawn only with a new bottle. Sampling equipment shall not require maintenance and calibration procedures.

Preservative required for liquid effluent characterization samples will be vendor supplied and added to the containers in the field. The caps will be sealed to the containers with tamper evident tape.

The samples shall be cleaned and surveyed for surface radioactivity. The released sample containers shall then be double bagged. The outer bag will be taped with tamper evident tape. The samples will be placed in a cooler containing ice. The cooler shall become part of the sample packaging.

Field logs will be completed per the "Environmental Investigations and Site Characterization Manual", WHC-CM-7-7, procedure EII 1.5 "Field Logbooks" at the time of sampling by the sampling team. A field logbook shall be maintained which contains information pertinent to the sampling and the information shall be quality record documents.

Sampling event documentation that has been validated will be transferred to Work Control and Data Management for inclusion in the EDMC files and to be prepared for public release.

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F.2. Routine Samples

The routine process sampling shall be completed by the UO₃ Plant operators trained to comply with WHC Procedure UO-080-006, "Sample UO₃ Liquid Effluent Stream" and WHC Procedure UO-080-002, "Pack and Ship Samples". Each sample shall be two - 1 liter plastic containers with a plastic lined cap. The containers shall be new polyethylene bottles.

The samples will be labeled with a sample tag containing sample point identification, an unique sample number, date and time. The samples shall be taken to the designated on-site laboratory for analysis.

A Data Sheet will be filled out at the time of sampling and will contain date, time, batch number totalizer reading and operator initials. The completed data sheet shall be delivered to UO₃ Environmental Engineering. The data sheet shall be reviewed and filed by Environmental Engineering with the completed analytical results from the laboratory.

Data and sample results that have been reviewed will be transferred to Work Control and Data Management for inclusion in the EDMC files, and to Environmental Assurance for the annual report of environmental releases.

G. SAMPLE HANDLING AND ANALYSIS

G.1. Liquid effluent characterization Samples

Liquid effluent characterization samples will be analyzed for the following:

- Sulfides, EPA method 9030
- Semi-volatile organics (semi-VOA), EPA method 8270
- Volatile organics (VOA), EPA method 8240
- Herbicides, EPA method 8150
- Organophosphorous Pesticides, EPA method 8140
- Polychlorinated biphenyls (PCB)/organochlorine pesticides, EPA method 8080
- Tin, EPA method 7870
- Mercury, EPA method 7470
- Hexavalent Chromium, EPA method 7196

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- Inductive coupled plasma (ICP) metals, EPA method 6010
- Total oil and grease, EPA method 413.2
- Chemical oxygen demand (COD), EPA method 410.4
- Sulfate, EPA method 375.4
- Phosphorous, EPA method 365.2
- Nitrate, EPA method 353.3
- Fluoride, EPA method 340.2
- Alkalinity, EPA method 310.1
- Acidity, EPA method 305.2
- Total dissolved solids (TDS), EPA method 160.1
- pH, EPA method 150.1
- Conductivity, EPA method 120.1
- Total alpha/beta, no standard method
- Total uranium, technetium-99 and tritium, no standard method

The handling and preparation of samples will comply with the procedures found in the "Environmental Investigations and Site Characterization Manual ", WHC-CM-7-7. The chain of custody shall comply with the procedure EII 5.1 "Chain of Custody". A chain of custody form will be filled out at the time of sampling and will accompany each liquid effluent characterization sample. A sample may consist of several containers. The chain of custody will account for each container. The preparation of either a single or a group of samples for shipment to a laboratory shall comply with the procedure EII 5.11 "Sample Packaging and Shipping".

Once a liquid effluent characterization sample has been drawn it must be in the physical control or view of the custodian, locked in an area where it can not be tampered with, or prepared for shipping with tamper-proof tape applied. Physical control includes being in the sight of the custodian, being in a room which will signal an alarm when entered, or locked in a cabinet. When more than one person is involved in sampling, one person shall be designated and only that person signs as sampler. This person is the custodian until the samples are transferred to another location or group and shall sign when releasing the samples to the designated receiver.

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The approved laboratory shall designate a sample custodian and a designated alternate responsible for receiving all samples. The sample custodian or his alternate shall sign and date all appropriate receiving documents at the time of receipt and at the same time initiate an internal Chain of Custody form using documented procedures. A continuous chain of custody will be maintained from the time of sampling until final disposition of all samples.

Analytical procedures for liquid effluent characterization samples shall meet the Quality Assurance guidelines of SW-846, Appendix Nine. The Statement Of Work for completing the analysis shall require the approved laboratories to have existing standard operating procedures and to submit any changes in their procedures during the contract term for approval. The approved laboratory procedures shall describe data reduction, verification, and reporting.

Liquid effluent characterization samples will be collected in commercially available, individually certified, precleaned glass or plastic bottles. The certification of the precleaned condition shall accompany the bottle.

Tentative container types and preservatives are as follows:

1. A 120-ml plastic container, containing 2-ml 6M sodium hydroxide and 2-ml of 1 wt% zinc acetate for preservative, for sulfides.
2. Four 1-liter amber glass containers with tetrafluoroethylene-lined caps, for semi-volatile organics, filled without bubble formation and with no head space.
3. Two duplicate 40-ml amber glass containers with tetrafluoroethylene-lined septum caps, for volatile organics, filled without bubble formation and with no head space.
4. Three 120-ml amber glass bottles, with tetrafluoroethylene-lined cap, with no preservatives, for herbicides, organophosphorous pesticides, organochlorine pesticides, and PCB's.
5. A 120-ml liter plastic container containing 1-ml nitric acid, for tin.
6. A 250-ml plastic container with tetrafluoroethylene-lined cap, with 0.5-ml nitric acid, for inductive coupled plasma metals and mercury.
7. A 500-ml plastic container with tetrafluoroethylene lined cap, having no preservative, for hexavalent chromium

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8. A 1-liter glass container, with 5-ml hydrochloric acid, for total oil and grease.
9. A 60-ml plastic container, adjusted with sulfuric acid to a pH<2 for chemical oxygen demand.
10. A 60-ml plastic container, having no preservative, for sulfate.
11. Five 120-ml plastic containers, having no preservative, for phosphorous, fluoride, acidity, alkalinity and total dissolved solids. One bottle for each test.
12. A 120-ml plastic container, adjusted with sulfuric acid to pH<2, for nitrates.
13. A 125-ml plastic container, having no preservative, for pH.
14. A 120-ml plastic container, with no preservative, for conductivity.
15. Two 1-liter plastic container with tetrafluoroethylene-lined cap; adjusted to a pH <2 by nitric acid; for total alpha, total beta, total uranium, technetium-99, and tritium.

The samples shall not be analyzed for total and fecal coliforms because there are no sanitary sewer connections. The samples shall not be analysed for Five Day Biological Oxygen Demand because there is no sanitary waste water and because the process does not use organic chemicals. In regards to radioisotopes, the samples shall only be analyzed for total uranium, technetium 99, and tritium.

Containers for volatiles and semi-volatiles shall be filled without bubble formation and without leaving a head space.

In addition to the QAPP lists, appropriate sample bottles will be used for the following analyses for field quality control samples. Section 16, Glossary, of the QAPP, gives the definitions for the quality control samples. Each (X) shows a sample that is equivalent to item descriptions in the list above. Pre-neutralized and Post-neutralized liquid effluent characterization samples will each have the same number of field blanks, trip blanks, and routine splits.

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<u>Parameter</u>	<u>Duplicates</u>		<u>Field</u> <u>Blanks</u>	<u>Trip</u> <u>Blanks</u>	<u>Rout.</u> <u>Split</u>
	<u>Pre.</u>	<u>Post</u>			
Sulfides	X	X			
Semi-VOA	X	X			
VOA	X	X	X	X	
Herbicides		X			
PCBs/Pesticides		X			
Tin	X	X			
Mercury	X	X			
Chromium	X	X			X
ICP Metals	X	X			
Oil and Grease		X			
COD		X			
Sulfate		X			
Phosphorous		X			
Nitrate	X	X			X
Fluoride	X	X			X
Alkalinity		X			
Acidity		X			
TDS		X			
pH					
Conductivity					
Alpha/Beta		X			X
Radionuclides	X	X			X

Samples of raw water used in evaluation shall be obtained under WHC-SD-CP-012, Uranium Oxide (UO₃) Plant Wastewater Effluent to 216-U-14 Ditch Sampling and Analysis Plan.

Field equipment blanks are not required. Samples are grab samples obtained by filling a bottle directly from a purged line tap.

Routine split samples are a set of extra bottles that are to be taken and analyzed at the on-site laboratory using the same procedures as in the routine samples. These analytical results will provide a comparison between the two types of samples.

The samples will be routed to an approved participant contractor or subcontractor laboratory for analysis. The data will be considered representative so long as at least 90 percent of the data points meet the established requirements in the laboratory contract for precision and accuracy. Data which does not meet this objective will be reviewed to determine whether the data can be used or whether corrective action should be taken. If necessary, corrective action will consist of repeating the sampling and analysis activity.

Data and record information that has been validated will be transferred to ETP for inclusion in the EDMC files and to an approved computer data

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Data and record information that has been validated will be transferred to ETP for inclusion in the EDMC files and to an approved computer data file (LEMIS) when it becomes available.

6.2 Routine Samples

The handling of the samples shall be according to the WHC Procedure UO-080-002, "Pack and Ship Samples". The procedure describes how the samples are packaged, how information is to be logged, and how samples are being transferred between the samples and the laboratory.

Past on-site analytical results were compared with Chapter 173-200 WAC, Water Quality Standards for Ground Waters of the State of Washington (State Drinking Water Standards) to select a list of analytes to be monitored. In addition to pH, chemical analytes are nitrate, chromium, and fluoride. Total uranium is also chemically analyzed because of groundwater contamination concerns. Radiochemical isotopic analytes are Tc-99, H-3, total alpha, and total beta. The only current source for all chemicals and radionuclides, except chromium, is the UNH feed material. Chromium is a stainless steel corrosion product.

The analyses performed on routine samples will be at a Hanford based laboratory, such as 222-S Laboratory. The laboratory will perform the analyses using current approved procedures and Quality Assurance requirements. The data sheets from the sampling and the results from the on-site laboratory analyses shall be quality record documents and stored at the UO₃ Plant. Analytical laboratory procedures are shown in TABLE 4 "Routine Sample Analytes and Procedures".


Data and sample results that have been reviewed will be transferred to Work Control and Data Management for inclusion in the EDMC files, or LEMIS, and to Environmental Assurance for the annual report on environmental releases. Flow data will be transferred to ETP for reporting to State and Federal regulators.

TABLE 4
ROUTINE SAMPLE ANALYTES AND PROCEDURES

ANALYTES	NUMBER	PROCEDURE
Metals (Cr, U)	LA-505-159	Acid Digestion of Sediments, Sludges, and Spills for ICP and AA Analysis.
	LA-505-151	Inductively Coupled Plasma (ICP) Emission Spectrometer Operations and Analysis.
Uranium	LA-925-106	Determination of Uranium by Laser Fluorometry.
Anions (NO ₃ , F)	LA-533-105	Anion Analysis on Dionex Model 4000i.
Technetium - 99	LA-438-101	Determination of Technetium - 99 by Solvent Extraction and Liquid Scintillation Counting.
Tritium	LA-218-113	Small Volume Tritium Analysis.
Alpha and Beta	LA-508-121	Operation of the Beckman LS 5801 Liquid Scintillation Counter.

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ORIGINAL

Date Received: 7-24-92		INFORMATION RELEASE REQUEST		Reference: WHC-CM-3-4	
Complete for all Types of Release					
Purpose			ID Number (include revision, volume, etc.) WHC-SD-CP-PLN-011 Rev. 1		
<input type="checkbox"/> Speech or Presentation <input type="checkbox"/> Full Paper (Check only one suffix) <input type="checkbox"/> Summary <input type="checkbox"/> Abstract <input type="checkbox"/> Visual Aid <input type="checkbox"/> Speakers Bureau <input type="checkbox"/> Poster Session <input type="checkbox"/> Videotape			<input checked="" type="checkbox"/> Reference <input checked="" type="checkbox"/> Technical Report <input type="checkbox"/> Thesis or Dissertation <input type="checkbox"/> Manual <input type="checkbox"/> Brochure/Flier <input type="checkbox"/> Software/Database <input type="checkbox"/> Controlled Document <input type="checkbox"/> Other		
			List attachments.		
			Date Release Required 7-24-92		
Title Uranium Oxide (UO ₃) Plant Process Condensate Effluent to 216-U-17 Crib Sampling and Analysis Plan				Unclassified Category UC-	
				Impact Level 3 ESC	
New or novel (patentable) subject matter? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has disclosure been submitted by WHC or other company? <input type="checkbox"/> No <input type="checkbox"/> Yes Disclosure No(s).			Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)		
Copyrights? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If "Yes", has written permission been granted? <input type="checkbox"/> No <input type="checkbox"/> Yes (Attach Permission)			Trademarks? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Identify)		
Complete for Speech or Presentation					
Title of Conference or Meeting			Group or Society Sponsoring		
Date(s) of Conference or Meeting		City/State		Will proceedings be published? <input type="checkbox"/> Yes <input type="checkbox"/> No	
				Will material be handed out? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Title of Journal					
CHECKLIST FOR SIGNATORIES					
Review Required per WHC-CM-3-4		Yes		No	
Classification/Unclassified Controlled Nuclear Information		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Patent - General Counsel		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Legal - General Counsel		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Applied Technology/Export Controlled Information or International Program		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
WHC Program/Project		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Communications		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
RL Program/Project		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Publication Services		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Other Program/Project		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Information conforms to all applicable requirements. The above information is certified to be correct.					
References Available to Intended Audience		Yes		No	
		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Transmit to DOE-HQ/Office of Scientific and Technical Information		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Author/Requestor (Printed/Signature)		Date			
L.L.L. Adams <i>[Signature]</i>		7/24/92			
WHC Cognizant Engineer					
Intended Audience					
<input type="checkbox"/> Internal <input type="checkbox"/> Sponsor <input checked="" type="checkbox"/> External					
Responsible Manager (Printed/Signature)		Date			
W. E. Ross <i>[Signature]</i>		7/24/92			
FOR WERE					
INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP					
Stamp is required before release. Release is contingent upon resolution of mandatory comments.					
					
Date Cancelled			Date Disapproved		

DISTRIBUTION SHEET

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July 22, 1992

Project Title/Work Order:

WHC-SD-CP-PLN-011 URANIUM OXIDE (UO₃) PLANT PROCESS CONDENSATE EFFLUENT TO 216-U-17 CRIB
SAMPLING AND ANALYSIS PLAN

EDT No.: 107524

ECN No.: ~~107524~~ 168430

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
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U.S. Department of Energy Field Office, Richland

S. S. Clark	A6-55
J. M. Hennig	A5-21
L. S. Mamiya	A5-21
J. E. Mecca	A6-55
R. S. Ollero	A6-55
J. E. Rasmussen	A5-15
A. L. Rodriguez	A5-15

Westinghouse Hanford Company

LLL Adams	T7-20
S. E. Albin	E3-21
G. T. Berlin	R1-62
R. E. Bolls	N3-13
S. L. Brey	T6-12
S. A. Brisbin	H4-16
M. J. Brown	R3-45
R. W. Brown	L6-79
G. D. Carpenter	A3-05
G. J. Carter	T1-06
G. T. Clark	T7-20
C. A. Colvin	S6-04
J. E. Cottrell	T7-20
W. E. Davis	S6-70
H. L. Debban	X0-43
A. J. DiLiberto	R1-48
G. W. Faulk	T3-28
D. L. Flyckt	R3-45
D. W. Fritz	T1-30
J. C. Fulton	R3-56
L. A. Garner	T5-54
C. J. Geier	B2-19
G. L. Geiger	S6-19
A. Greenberg	S4-01
M. L. Grygiel	S6-65
K. A. Hadley	R3-56

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K. J. Hagerty	T7-20
D. L. Halgren	R3-45
W. H. Hamilton Jr.	N3-10
D. R. Herman	S4-01
G. S. Hunacek	X0-41
J. E. Hyatt	R1-02
D. E. Kelley	R1-48
L. D. Lang	P7-28
R. E. Lerch	B2-35
P. J. Mackey	B3-15
R. A. Meznarich	S0-61
J. C. Midgett	S6-15
P. C. Miller	N2-04
A. R. Olander	R3-45
R. W. Oldham	H4-57
K. A. Peterson	S6-70
R. D. Pierce	N3-13
R. E. Piippo	S6-05
S. M. Price	H4-57
W. A. Retterer	S2-93
W. E. Ross	T7-09
W. G. Ruff	R3-50
J. A. Seamans	N2-04
D. H. Shuford	T7-09
S. T. Smith	S1-53
D. J. Sommer	R1-48
M. W. Stevenson	S6-70
D. J. Swaim	N2-51
J. D. Thomson	R1-30
L. W. Vance	H4-16
E. C. Vogt	T5-50
G. J. Warwick	T6-12
D. J. Watson	X0-41
C. D. Wollam	S6-19
E. Yusis	S4-01
Project Files	R1-28
Publications Services	R1-08
Central Files (2)	L8-04
Document Clearance	
Administration	R1-08
Document Processing and	
Distribution (2)	L8-15
EDMC	H4-22